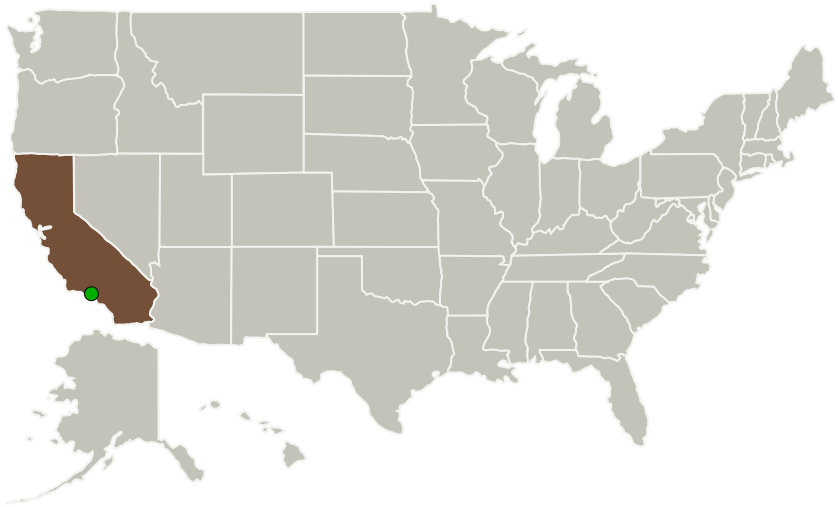
20 W High Efficiency 1550 nm Pulsed Fiber Laser, Phase II

Completed Technology Project (2015 - 2017)

Project Introduction

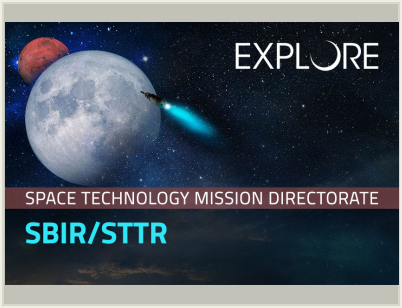
High efficiency pulsed lasers have been considered to be an enabling technology to build high power transmitters for future deep space high rate space communications. However, to achieve a high peak power at a high repetition rate and with a short pulse width and >25% wall plug efficiency still remains an issue unsolved. PolarOnyx proposes a novel approach targeting to make 20W high power fiber laser at 1550 nm and resolve the issues of efficiency. A tabletop feasibility demonstration has been carried out at the end of Phase I. A prototype will be delivered at the end of Phase II.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Polaronyx, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	San Jose, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California



20 W High Efficiency 1550 nm Pulsed Fiber Laser, Phase II

Table of Contents

Project Introduction	1
Primary U.S. Work Locations and Key Partners	1
Images	2
Organizational Responsibility	2
Project Management	2
Technology Maturity (TRL)	3
Technology Areas	3
Target Destinations	3

20 W High Efficiency 1550 nm Pulsed Fiber Laser, Phase II

Completed Technology Project (2015 - 2017)

Images

Briefing Chart
20 W High Efficiency 1550 nm Pulsed Fiber Laser Briefing Chart *(https://techport.nasa.gov/image/130877)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Polaronyx, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Jian Liu

Co-Investigator:

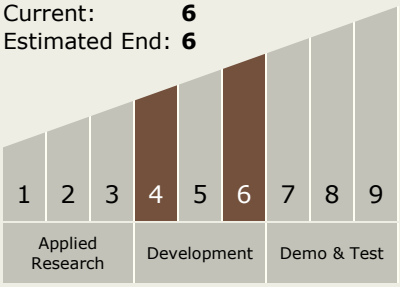
Jian Liu

20 W High Efficiency 1550 nm Pulsed Fiber Laser, Phase II

Completed Technology Project (2015 - 2017)

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX05 Communications, Navigation, and Orbital Debris Tracking and Characterization Systems
  - TX05.1 Optical Communications
    - TX05.1.3 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System